

What is claimed is:

1. An interworking subsystem for providing interoperation between a digital communication network and a public switched telephone network (PSTN), said interworking subsystem comprising:

an input for receiving a first communication signal from the digital communication network;

a de-vocoder for performing a de-vocoding operation on said first communication signal to generate a first output signal;

a protocol termination unit for performing a protection protocol termination operation on said first communication signal to generate a second output signal; and

a signal combiner for combining said first output signal and said second output signal into a composite signal for delivery to a destination user within the PSTN.

2. The interworking subsystem claimed in claim 1, wherein: said de-vocoder and said protocol termination unit each operate upon said first communication signal regardless of a signal type of said first communication signal.

3. The interworking subsystem claimed in claim 1, wherein: said first output signal includes a plurality of pulse code modulation (PCM) samples.

4. The interworking subsystem claimed in claim 3, wherein: said second output signal includes a stream of digital data bits.

5. The interworking subsystem claimed in claim 4, wherein: said signal combiner overlays said stream of digital data bits onto said plurality of PCM samples.

SLB
A1

6. The interworking subsystem claimed in claim 4, wherein:
said signal combiner inserts individual data bits from said stream of digital data
bits into predetermined bit positions within the plurality of PCM samples.

5

7. The interworking subsystem claimed in claim 5, wherein:
said signal combiner inserts data bits into the predetermined bit positions of the
plurality of PCM samples only when a signal received by the interworking subsystem
from the destination user within the PSTN includes digital data.

10

8. The interworking subsystem claimed in claim 1, further comprising:
a second input for receiving a second communication signal from the PSTN;
a signal analyzer for analyzing said second communication signal to determine
whether said second communication signal includes digital data;
a data extractor for extracting digital data from said second communication signal
when said signal analyzer detects digital data therein; and
a protocol unit for applying a system-native digital protocol associated with the
digital communication network to said digital data to generate a protocol protected digital
data signal for delivery to a user within the digital communication network.

20

9. The interworking subsystem claimed in claim 8, further comprising:
a vocoder for performing a vocoding operation on said second communication
signal when said signal analyzer does not detect digital data within said second
communication signal.

25

10. A method for providing interoperation between a digital communication
network and a public switched telephone network (PSTN), said method comprising:
receiving a system-native digital communication signal from the digital
communication network;

30

first processing the system-native digital communication signal using a de-
vocoding routine to generate a first intermediate signal;

14

00650516 032900

second processing the system-native digital communication signal using a protocol termination routine to generate a second intermediate signal; and combining said first and second intermediate signals into a composite signal for delivery into the PSTN.

5

11. The method claimed in claim 10, wherein:
said first intermediate signal includes PCM samples.

10

12. The method claimed in claim 11, wherein:
said second intermediate signal includes a stream of digital data bits.

15

13. The method claimed in claim 12, wherein:
said step of combining includes distributing individual bits from said stream of digital data bits into predetermined bit positions within said PCM samples.

20

14. The method claimed in claim 12, wherein:
said step of combining includes inserting successive bits from said stream of digital data bits into least significant bit (LSB) positions of successive PCM samples.

25

15. A method for formatting data for delivery through a public switched telephone network (PSTN), comprising:
providing PCM samples, each of said PCM samples having a plurality of bit positions including a least significant bit (LSB) position;
providing a stream of user data bits; and
substituting individual user data bits from said stream of user data bits into predetermined bit positions of said PCM samples before delivering said PCM samples through the PSTN.

543
A2

16. The method claimed in claim 15, wherein:
said step of substituting includes substituting individual user data bits from said stream of user data bits into the LSB positions of said PCM samples.

5 17. The method claimed in claim 16, wherein:
said step of substituting includes substituting data bits in a sequential manner.

18. The method claimed in claim 15, wherein:
said step of providing PCM samples includes receiving a digital communication
10 signal from a digital communication network and processing said digital communication signal using a de-vocoding algorithm.

19. The method claimed in claim 15, wherein:
said step of providing PCM samples includes acquiring an analog audio signal
and sampling said analog audio signal at a predetermined sampling rate.

20. The method claimed in claim 15, wherein:
said step of providing PCM samples includes generating dummy samples
including simulated audio information.

21. The method claimed in claim 15, wherein:
said step of providing a stream of data bits includes receiving a digital
communication signal from a digital communication network and removing a system-
native protection protocol from said digital communication signal.

22. The method claimed in claim 15, wherein:
said step of providing a stream of data bits includes providing a computer data file
having data to be transferred to a remote location and reading said computer data file.

23. A computer readable medium having a program stored thereon for implementing the method claimed in claim 15 when executed within a digital processor.

24. A communication device having a digital processor and a computer readable medium, said computer readable medium having a program stored thereon for implementing the method claimed in claim 15 when executed within said digital processor.

006280 91505960

ADD
A4